REMARKS

In the last Office Action, the Examiner objected to claims 4-6 and 10-15 as containing informalities. Claims 1-15 were rejected under 35 U.S.C. §112, second paragraph, for indefiniteness. Claims 1-6 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,307,190 to Wakita et al. ("Wakita").

In accordance with the present response, the specification has been suitably revised to correct informalities, provide antecedent basis for the claim language, and bring it into better conformance with U.S. practice. Original independent claims 1 and 2 have been amended to further patentably distinguish from the prior art of record. Original claims 1-15 have been amended to correct informalities, including those noted by the Examiner, and to overcome the rejection under 35 U.S.C. §112, second paragraph. Claims 1-15 have been further amended in formal respects to improve the wording and to bring them into better conformance with U.S. practice. Claim 16 has been canceled without prejudice or admission and subject to applicant's right to file a divisional application to pursue the subject matter of the non-elected claim. New claims 17-20 have been added to provide a fuller scope of coverage. A new abstract which more

clearly reflects the invention to which the amended and new claims are directed has been substituted for the original abstract.

In view of the foregoing, applicant respectfully submits that the objection to the claims and the rejection of claims 1-15 under 35 U.S.C. §112, second paragraph, have been overcome and should be withdrawn.

Applicant respectfully requests reconsideration of his application in light of the following discussion.

BRIEF SUMMARY OF INVENTION

The present invention is directed to a portable information apparatus.

Conventional film liquid crystal devices have been used in electronic information apparatuses such as electronic timepieces. In the conventional film liquid crystal devices, a pair of flexible substrates are spaced apart to define a gap therebetween containing a liquid crystal material. A sealing portion (e.g., solder or adhesive) seals an injection port through which the liquid crystal is injected into the gap. However, when the film liquid crystal device is supported by mounting members in a curved state, the location of the sealing portion, which is hardly deformed as compared with the flexible substrates, prevents the film liquid crystal device from achieving a uniform bent state.

The present invention overcomes the drawbacks of the conventional art. Figs. 1-6 show an embodiment of a portable information apparatus 100 according to the present invention embodied in the claims. The portable information apparatus 200 has a film liquid crystal device 2 having a pair of flexible substrates 32, 33 spaced apart from one another to define a gap therebetween containing liquid crystal. The film liquid crystal device 2 has first surface portions 12 having a generally curved cross-section, at least one second surface portion 11 having a generally planar cross-section, and an injection port formed in the second surface portion 11 and through which the liquid crystal is injected into the gap. A sealing portion 31 is disposed on the second surface portion 11 for sealing the injection port. A holding structure (e.g., holding members 4, 5) holds the film liquid crystal device 2 in a curved state while the second surface portion of the film liquid crystal device 2 remains generally planar in cross-section.

In another embodiment, the film liquid crystal device 2 has at least two second surface portions 11 having a generally planar cross-section in the curved state of the film liquid crystal device, the sealing portion 31 being disposed on one of the second surface portions 11. A connection terminal 15 is disposed on the other of the second surface

portions 11 for electrically connecting the film liquid crystal device to a circuit block.

By the foregoing construction, the second surface portions of the film liquid crystal device remain generally planar in cross-section even when the film liquid crystal device is held by the holding structure in a curved state. As a result, since the sealing portion and the connection terminal are disposed on respective ones of the planar surface portions of the film liquid crystal device, the sealing portion and the connection terminal do not impede or interfere with the curvature state of the film liquid crystal device as compared to the conventional art.

Traversal of Prior Art Rejections

Claims 1-6 were rejected under 35 U.S.C. §102(b) as being anticipated by Wakita. Applicant respectfully traverses this rejection and submits that amended claims 1-6 recite subject matter which is not identically disclosed or described in Wakita.

Amended independent claim 1 is directed to a portable information apparatus and requires a film liquid crystal device having a pair of flexible substrates spaced apart from one another to define a gap therebetween containing liquid crystal, a plurality of first surface portions having a

generally curved cross-section, at least one second surface portion having a generally planar cross-section, an injection port formed in the second surface portion and through which the liquid crystal is injected into the gap, and a sealing portion disposed on the second surface portion for sealing the injection port. Amended claim 1 further requires a holding structure for holding the film liquid crystal device in a curved state while the second surface portion of the film liquid crystal device remains generally planar in cross-section. No corresponding structural combination is disclosed or described by Wakita.

Amended independent claim 2 is also directed to a portable information apparatus and requires a film liquid crystal device having a pair of flexible substrates spaced apart from one another to define a gap therebetween containing liquid crystal, a plurality of first surface portions having a generally curved cross-section, at least one second surface portion having a generally planar cross-section, an injection port formed in the second surface portion and through which the liquid crystal is injected into the gap, and a connection terminal disposed on the second surface portion for electrically connecting the film liquid crystal device to a circuit block. Amended claim 2 further requires a holding structure for holding the film liquid crystal device in a

curved state while the second surface portion of the film liquid crystal device remains generally planar in cross-section. Again, no corresponding structural combination is disclosed or described by Wakita.

Wakita discloses a liquid crystal panel having (Figs. 3 and 5) spaced-apart substrates and a ferroelectric liquid crystal interposed therebetween. The ends of the substrates are sealed by sealing portions 31 (Fig. 3) or 10 (Fig. 5). However, Wakita does not disclose or describe a film liquid crystal device having a surface portion on which a sealing portion is disposed and which remains generally planar in cross-section in a curved state of the film liquid crystal device, as required by amended independent claim 1. Likewise, Wakita does not disclose or describe a film liquid crystal device having a surface portion on which a connection terminal for electrically connecting the film liquid crystal device to a circuit block is disposed and which remains generally planar in cross-section in a curved state of the film liquid crystal device, as required by amended independent claim 2.

More specifically, as shown in Figs. 3 and 5b of Wakita, the surface portions of the liquid crystal panel on which the sealing portions 31 or 10 are disposed clearly do not remain generally planar in cross-section in a curved state of the liquid crystal panel. Stated otherwise, the surface

portions of Wakita's liquid crystal panel on which the sealing portions 31 or 10 are disposed are also curved in a curved state of the liquid crystal panel. For example, with respect to Fig. 3, Wakita explicitly discloses that upon deformation of the liquid crystal panel, the ends of the substrates which are fixed by the sealing portions 31 (i.e., the surface portions on which the sealing portions 31 are disposed) have a curvature (i.e., "undulations of a curved surface at the panel ends") which is opposite to that of a curved surface at a central portion of the liquid crystal panel (col. 5, line 66 to col. 6, line 3).

Accordingly, Wakita does not disclose or describe a film liquid crystal device having a surface portion on which a sealing portion is disposed and which remains generally planar in cross-section in a curved state of the film liquid crystal device, as required by amended independent claim 1, and a film liquid crystal device having a surface portion on which a connection terminal for electrically connecting the film liquid crystal device to a circuit block is disposed and which remains generally planar in cross-section in a curved state of the film liquid crystal device, as required by amended independent claim 2. In the absence of the foregoing disclosure recited in amended independent claims 1 and 2,

anticipation cannot be found. See, e.g., W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) ("Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration"); Continental Can Co. USA v. Monsanto Co., 20 USPQ2d 1746, 1748 (Fed. Cir. 1991) ("When more than one reference is required to establish unpatentability of the claimed invention anticipation under § 102 can not be found".); Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added) ("Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim").

Stated otherwise, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. This standard is clearly not satisfied by Wakita for the reasons stated above. Furthermore, Wakita does not suggest the claimed subject matter and, therefore, would not have motivated one skilled in the art to modify Wakita's liquid crystal panel to arrive at the claimed invention.

Claims 3, 4, 6 and 5 depend on and contain all of the limitations of amended independent claims 1 and 2,

respectively, and, therefore, distinguish from the reference at least in the same manner as claims 1 and 2.

Moreover, there is a separate ground for patentability of amended dependent claim 3 which includes the additional limitation that the at least one second surface portion comprises at least two second surface portions having a generally planar cross-section in the curved state of the film liquid crystal device, the sealing portion being disposed on one of the second surface portions. Claim 3 further requires that the portable information apparatus further comprises a connection terminal disposed on the other of the second surface portions for electrically connecting the film liquid crystal device to a circuit block. Wakita does not disclose or suggest two surface portions having a generally planar cross-section in the curved state of the liquid crystal panel as set forth above for amended independent claims 1 and 2.

In view of the foregoing, applicant respectfully requests that the rejection of claims 1-6 under 35 U.S.C. §102(b) as being anticipated by Wakita be withdrawn.

Applicants respectfully submit that amended claims 7-15 and newly added claims 17-20 also patentably distinguish from the prior art of record.

Claims 7, 9, 10, 12, 13, 15 and 8, 11, 14 depend on and contain all of the limitations of amended independent claims 1 and 2, respectively, and, therefore, distinguish from the prior art of record at least in the same manner as claims 1 and 2.

Moreover, there are separate grounds for patentability of amended dependent claims 7-15 which are directed to the specific structure of the film liquid crystal device and the first holding member. As recognized by the Examiner, no corresponding structure is disclosed or suggested by the prior art of record.

New independent claim 17 is directed to a portable information apparatus and requires a film liquid crystal device having a pair of flexible substrates spaced apart from one another to define a gap therebetween containing liquid crystal, at least one surface portion having a generally planar cross-section, an injection port formed in the planar surface portion and through which the liquid crystal is injected into the gap, and a sealing portion disposed on the planar surface portion for sealing the injection port. Claim 17 further requires a holding structure for holding the film liquid crystal device therebetween in a curved state while the planar surface portion of the film liquid crystal device is generally parallel with a curvature axis of the film liquid

crystal device. No corresponding structural combination is disclosed or suggested by the prior art of record as set forth above for amended independent claims 1 and 2.

Claims 18-20 depend on and contain all of the limitations of independent claim 17 and, therefore, distinguish from the prior art of record at least in the same manner as claim 17.

In view the foregoing amendments and discussion, the application is believed to be in allowable form. Accordingly, favorable reconsideration and allowance of the claims are most respectfully requested.

Respectfully submitted,

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April 19, 2004
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